Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854

978.970.5600 PHONE
978.453.1995 FAX

www.TRCsolutions.com

TRC Reference No. 115058

August 26, 2011

Molly Cote
Massachusetts Department of Environmental Protection
Southeast Regional Main Office
20 Riverside Drive
Lakeville, Massachusetts 02347

RE: Special Project Status Annual Report (July 1, 2010 – June 30, 2011)
Parker Street Waste Site
New Bedford, Massachusetts

Dear Ms. Cote:

TRC Environmental Corporation (TRC) prepared this Special Project Status Annual Report on behalf of the City of New Bedford (City) for the Parker Street Waste Site (PSWS) in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). The site is tracked by the Massachusetts Department of Environmental Protection (MassDEP) under Release Tracking Number (RTN) 4-15685. Due to logistical complexities, the response actions at this disposal site continue to be conducted under a Special Project Designation. Additional RTNs for which response actions have been conducted under the Special Project Designation follow:

- RTN 4-15824 – Former Keith Junior High School (KJHS)/New Andrea McCoy Field (McCoy Field) historic underground storage tank (UST) release.
- RTN 4-21300 – Immediate Response Action (IRA) to address polychlorinated biphenyl (PCB) impacted sediments within Keith Middle School (KMS) wetland.
- RTN 4-21407 – IRA to address arsenic impacted surface soil at the Varsity and Junior Varsity Baseball Diamond portions of the Dr. Paul F. Walsh Memorial Field (Walsh Field).
- RTN 4-21823 – IRA to address lead impacted soil at the Soccer Field portion of Walsh Field.

- RTN 4-21847 – IRA to address PCB impacted soil at the New Bedford High School (NBHS) campus.
- RTN 4-21872 – IRA to address arsenic and chromium impacted surface soil at the NBHS campus.
- RTN 4-22409 – IRA to address a Condition of Substantial Release Migration (SRM) / Critical Exposure Pathway (CEP) at the NBHS campus.
- RTN 4-23223 – IRA to address PCB impacted surface soil within the Ruggles Street right-of-way adjacent to the Nemasket Street Lots.

This Special Project Status Annual Report, required under 310 CMR 40.0064(2)(i) of the MCP, describes the status of response actions for the above-referenced project, which was granted a five year Special Project Status Extension on June 2, 2007. The reporting period covered by this letter is July 1, 2010 through June 30, 2011.

BACKGROUND

Environmental investigations of the NBHS campus were initiated by BETA Group, Incorporated (BETA) in 2006. TRC continues to conduct response actions within this portion of the PSWS. Investigations have been initiated at several privately-owned parcels, which require further evaluation. However, due to privacy concerns expressed by some homeowners, the City requests that specific information on privately-owned parcels not be documented in Special Project Designation related reporting.

A Partial Response Action Outcome (RAO-P) was filed with the MassDEP by BETA for the KMS portion of the site.

Note that historical information, forensic review of historical aerial photographs, evaluation of soil analytical data, and review of soil boring information associated with environmental investigations conducted by TRC and others, including the Environmental Protection Agency (EPA), near Walsh Field and the New McCoy Field indicate that the area south of Parker Street contains widely distributed historic urban fill that is a background condition. Although the City filed a Class A-1 RAO-P with the MassDEP for the Former KJHS/New McCoy Field historic UST release (RTN 4-15824) on June 28, 2010, and Class A-3 RAO-P's for Walsh Field and the Former KJHS/New McCoy Field on May 26, 2011, the City is presently of the opinion that the area south of Parker Street is not part of what is now understood to be the PSWS.

Investigations conducted by the EPA and the MassDEP during this reporting period are not considered to be part of the PSWS and are not described in this report.

Basis for the Special Project Designation - The investigation and remediation of the PSWS requires coordination and site-specific negotiation with private property owners, the involvement of the EPA Regional PCB Coordinator due to Toxic Substances Control Act (TSCA) PCB impact triggers, and MassDEP in their oversight role. The

implementation of response actions requires a significant amount of site work over a large area, and coordination with ongoing activities with a multitude of property owners and stakeholders.

The City anticipates filing an application for extension of the existing Special Project Designation Permit per 310 CMR 40.0067(1) of the MCP in late 2011/early 2012. The City will provide public notice of the extension application per 310 CMR 40.0062(5) and a 20-day public comment period will follow publication of the application notification per 310 CMR 40.0062(5)(c). The City will respond to written comments and the Special Project Designation Permit extension application will be submitted to MassDEP shortly thereafter.

STATUS OF RESPONSE ACTIONS

Technical Activities – TRC continues to provide technical support to the City, as follows:

- ***Keith Middle School (KMS)***

  - **Long-Term Monitoring and Maintenance Implementation Plan (LTMMIP) -** The LTMMIP prepared by BETA and dated October 20, 2006 sets forth a plan for the long-term monitoring and maintenance of the exposure management barrier (soil and pavement cap), groundwater, wetland sediment, vent gas and indoor air quality of the KMS campus and adjacent wetland. The LTMMIP also describes the maintenance activities to be performed at the KMS property and related precautions to prevent exposure to the impacted fill layer located beneath the exposure management barrier. TRC continues to perform monitoring activities set forth under the LTMMIP.

    On March 24, 2009, TRC prepared a letter to EPA summarizing recommended changes to the KMS LTMMIP based on input from a panel of in-house technical specialists (e.g., chemists, air monitoring specialists, cap engineers, and risk assessors) who performed a comprehensive review of the LTMMIP. The recommendations sought to streamline monitoring and maintenance procedures, while still providing useful data and effectively monitoring the protectiveness of the remedy. The EPA reviewed the recommended changes to the LTMMIP, vetted select recommendations with the MassDEP and provided comments prior to TRC initiating a revision of the LTMMIP on behalf of the City.

    On June 8, 2011, the EPA and MassDEP were provided with copies of the Revised LTMMIP, Revision 5.0. No response from EPA or MassDEP has been received as of this date.

    The City issued a fact sheet summarizing the results of the LTMMIP monitoring activities in September 2010.

- **Wetland Slope Repair**

  The Department of Public Infrastructure (DPI) installed a gate in the fence at the southwestern corner of the KMS property in late May 2010 allowing for the regular maintenance of the southern slope. The City has initiated cutting of invasive Japanese knotweed stands established along the cap slope, including the southwestern corner. Following cutting events in July and August 2011, the City anticipates applying herbicides in the late summer/early fall 2011.

- **KMS Wetland**

  As detailed in the IRA Completion Report dated October 8, 2010, between May 2008 and February 2010 several rounds of sampling were conducted to evaluate the extent of the impacts within the KMS wetland. This included sediment sampling, cap slope and toe-of-slope sampling, sediment sampling, surface water sampling and installation of soil borings and supplemental groundwater sampling.

  TRC completed a Stage I ES and a Stage II ERC which was submitted to MassDEP and EPA on November 5, 2010. The City received initial comments from the EPA on April 19, 2011, to which TRC responded on July 8, 2011.

  A Phase II Comprehensive Site Assessment (CSA) describing KMS wetland investigation activities is expected to be issued for public review at the end of August 2011 and to be filed with MassDEP shortly thereafter.

  The City issued a fact sheet in June 2010 discussing the KMS wetlands.

- ***New Bedford High School***

  - **Interior PCB Source Mapping, PCB Air Monitoring and Remedy Implementation -** TRC continues to support the City in the investigation and remediation of PCB-containing building materials consistent with EPA regulations. Please refer to the City's website for additional documentation on the interior PCB effort conducted under EPA oversight.

  - **Phase II CSA Report -** A Phase II CSA for the NBHS campus was submitted to MassDEP on April 6, 2011.

  - ***HF-31 Area RAM Plan -*** During the delineation of PCB impacted soils at sample location HF-31 at the NBHS campus, PCBs were detected at sample location HF-31D at a concentration of 71.6 milligrams per kilogram (mg/kg) in the 1-3 foot sampling interval. As PCBs were detected at a concentration greater than 50 mg/kg in soils, the remediation activity at sample location HF-31D were performed in compliance with 40 CFR §761, and the MCP.

A PCB Remediation Notification letter was issued by the City to the EPA on July 14, 2010. Following a teleconference with the EPA Region 1 PCB Coordinator, an amendment to the PCB Remediation Notification letter was issued to EPA on October 21, 2010. The EPA issued a TSCA applicability letter to the City on December 2, 2010

The area of sample location HF-31 was identified for targeted soil removal to achieve a Condition of No Significant Risk under the MCP for the top three feet of soil. Following a 20-day comment period, a Release Abatement Measure (RAM) Plan was submitted to the MassDEP on November 24, 2010. MassDEP issued Conditional Approval to conduct the RAM on February 4, 2011. RAM activities including site preparation, soil excavation, offsite transportation and disposal of impacted soil material and backfilling activities were implemented between February 22, 2011 and February 24, 2011. A total of seven cubic yard boxes of PCB Remediation Waste were transported offsite for disposal at the EQ-Wayne chemical waste landfill facility in Bellville, Michigan. In addition, a total of approximately 168-tons of soil were shipped to the Greater New Bedford Regional Refuse Management District's Crapo Hill Landfill (Crapo Hill) facility in New Bedford.

TRC submitted a RAM Completion Report to MassDEP on behalf of the City on March 29, 2011.

The response actions performed under the HF-31 Area RAM served to remove the EPA-regulated PCB Remediation Waste soil and to reduce current and future risks at the same location HF-31. No other soil removal or remediation activities at the NBHS campus were addressed by the HF-31 Area RAM Plan.

- ***NBHS Campus RAM Plan*** **-** Following a 20-day comment period, a RAM Plan was submitted to the MassDEP on April 6, 2011. The proposed RAM included the following:

  - **Excavation** - Excavation of impacted soil that contributes to Exposure Point Concentrations (EPCs) in excess of MCP Method 1/Method 2 S-1 soil standards in the top 3 feet in landscaped areas as well as excavation of impacted soil with a benzo(a)pyrene Upper Concentration Limit (UCL) exceedance at sample location SB-308 (5 feet at SB-308).
  - **Paving** - Expansion of paved surfaces in select areas to prevent direct contact exposure to impacted soil.
  - **Recycling** - On-site crushing of asphalt and concrete materials generated from the removal of existing surfaces and reuse of material as construction material consistent with the MassDEP asphalt, brick and concrete (ABC) policy and associated Massachusetts solid waste regulations.
  - **Soil Management** - Temporary soil stockpiling and stockpile management at an off-site City-owned location prior to disposal.

- **Disposal** - Off-site disposal of excavated soil at appropriately licensed facilities.
- **Restoration** - Backfilling of soil excavations with documented contaminant-free fill material.

MassDEP issued Conditional Approval to conduct the RAM on April 15, 2011 and RAM-related activities were initiated on April 16, 2011. As part of the Conditional Approval, a RAM Plan Modification was required prior to conducting activities "where pavement will be increased and/or for the installation of storm water utilities." A RAM Plan Modification was submitted to MassDEP on July 22, 2011, which included the following changes to proposed RAM Plan activities:

- **Drainage Structures –** In Exposure Point Area HS-5 (Flag Pole Area), subsurface stormwater retention structures will be installed to abate peak runoff volumes;
- **Reduce Proposed Paving with Alternate Risk Reduction Measures** - The implementation of risk reduction measures in the northern portion of the Site at Exposure Point Area HS-8 will support the future use as a solar park (Original RAM Plan identified this area as to be paved);
- **Elimination of On-site Pavement Crushing –** The existing parking lots in the northern portion of the Site will remain in place, therefore on-site crushing of asphalt and concrete as part of the project will not take place;
- **Security Fence in Northern Portion of the Site –** The entire northern portion of the Site will be secured with a chain link fence prior to the commencement of any work in the area; and
- **Consideration for Existing Stands of Trees –**
  - In the areas to be paved where trees are located, the trees will remain in place and the soils surrounding the trees and root systems will be excavated to a depth of three feet; and
  - In the remaining excavations where trees are located, the trees will remain in place and the soils surrounding the trees and root systems will be excavated to a depth of three feet.

MassDEP issued Conditional Approval of the RAM Plan Modification on August 1, 2011.

A RAM Status Report was submitted to MassDEP on August 5, 2011 which described RAM-related activities conducted to date.

- **NBHS Mechanical Room IRA –** TRC collected groundwater and aqueous seep samples near where groundwater appears to seep into the Mechanical Room of the NBHS building. TRC evaluated the influence of the building structure and drainage system relative to the fate and transport of groundwater

beneath the building and conducted an Imminent Hazard (IH) evaluation, which concluded that an IH condition was not present.

The detection of chlorinated VOCs in groundwater, seep water and indoor in the vicinity of the Mechanical Room were reported as potential SRM conditions to the MassDEP on January 29, 2010. MassDEP orally approved the IRAs at the site and assigned RTN 4-22409.

TRC then undertook investigations of indoor air, subslab soil vapors, groundwater, aqueous seeps, storm sewer infrastructure and sanitary sewer infrastructure to evaluate the SRM and the nature and extent of impacts at NBHS. An IRA Plan was submitted to MassDEP on March 22, 2010, which described initial IRA activities and additional investigation activities and CEP mitigation measures to be implemented at NBHS.

IRA Status Reports dated May 24, 2010 and November 29, 2010 described the results of investigation and mitigation activities. Based on groundwater sampling results from October and November 2010, the lateral and vertical extents of VOC impacts in the vicinity of the Mechanical Room were defined and an IRA Plan Modification was submitted to MassDEP on January 18, 2011. The IRA Plan Modification added the removal of chlorinated VOC-impacted groundwater in the vicinity of monitoring well MW-27 in the Mechanical Room by pumping and vacuum extraction (Total Fluid Extraction [TFE]) and off-site disposal to the previously approved IRA activities.

MassDEP issued a written approval of the IRA Modification activities on February 23, 2011. TFE activities were initiated on February 25, 2011. To date a total of approximately 2,600 gallons of groundwater have been removed during five separate vacuum extraction events. Supplemental groundwater sampling, well gauging and indoor air sampling results are also described in the IRA Status Report, dated May 31, 2011.

The May 31, 2011 IRA Status report also describes seepage mitigation activities implemented by the City. Between December 2010 and April 2011, Hydra Concrete Waterproofing (Hydra) of Holliston, Massachusetts applied Contite® penetrating mortar to cracks within the Mechanical Room. Based on the most recent inspection, the penetrating mortar was successful in reducing the amount of seepage from the cracks throughout a large portion of the Mechanical Room.

The City prepared fact sheets in January, March and June 2010 and in April 2011 that identified issues being studied at NBHS and summarized the investigation findings to date.

- **NBHS Dioxin Investigation -** An initial environmental investigation of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated

dibenzofurans (PCDFs), collectively referred to as dioxin compounds, in soil at the NBHS campus was conducted in April 2010, consistent with TRC's *Proposed New Bedford High School Dioxin Investigation Technical Approach* memorandum dated March 3, 2010. The analytical results were described in a memorandum dated July 6, 2010.

On January 13, 2011, MassDEP commented on the memorandum, acknowledged the investigatory approach, and suggested further sampling.

A recommended supplemental sampling approach was presented in a *Proposed New Bedford High School Follow-up Sampling Technical Approach* memorandum dated April 13, 2011.

On June 7 and 8, 2011, TRC advanced soil borings using direct push GeoProbe® technology and collected soil samples from nine locations. Soil samples were submitted for laboratory chlorinated dioxin/dibenzofuran congeners (SW-846 Method 8290) and full 209 list PCB congeners (SW-846 Method 1668A).

The analytical results associated with the dioxin investigation at NBHS are currently undergoing review and validation.

- **Liberty Street Drainage Improvements** – In November 2009, the City of New Bedford's DPI proposed drainage improvements adjacent to Liberty Street. In a memorandum dated March 10, 2010, the City proposed a sampling approach along the project corridor to support a regulatory determination. Following verbal approval of the sampling approach by EPA on May 5, 2010, soil sampling consistent with the approach described in the March 10, 2010 memorandum was conducted.

  The *Analytical Results from Supplemental Soil Data Collection Along Drainage Installation Route* memorandum to the EPA dated June 17, 2010 summarized the results of the supplemental investigation. EPA issued a TSCA Applicability letter to the City regarding the regulatory jurisdiction on August 17, 2010.

  The proposed drainage improvements were implemented by the DPI following the submittal of and in accordance with a Utility-Related Abatement Measure (URAM) pursuant to 310 CMR 40.0460 of the MCP on July 16, 2010. URAM related activities were initiated on November 9, 2010. TRC submitted a URAM Status Report on November 15, 2010 summarizing the initiation of trenching activities in support of the drainage improvements project.

  As described in TRC's URAM Completion Report dated March 31, 2011, drainage improvement activities were completed on November 23, 2010.

All soil permanently displaced during URAM related response actions was transported offsite for disposal on January 20, 2011 and January 25, 2011. Clean Harbors Environmental Services (CHES) of East Providence, Rhode Island was contracted by the City to facilitate transportation and disposal of approximately 351 tons of material at the Greenwood Street Landfill in Worcester, Massachusetts.

- ***Walsh Field***

  A RAM Plan for removal of impacted soil from the Walsh Field athletic complex was submitted to the MassDEP on October 7, 2009. The RAM Plan described remediation activities to be implemented at Walsh Field consistent with the Interim Phase III Remedial Action Plan (RAP) submitted to MassDEP on July 29, 2009.

  RAM Status Reports dated February 2, 2010 and August 4, 2010, document the RAM-related activities and work that occurred discontinuously until March 19, 2010.

  Excavation and treatment of impacted soils from the infield portion of the Varsity baseball diamond at Walsh Field took place between August 16 and September 30, 2010. Reconstruction of the Varsity baseball diamond occurred discontinuously until November 19, 2010 when backfilling and restoration were completed.

  Following post-treatment analytical characterization, on September 16, 2010 the Commercial Recycling Systems (CRS) asphalt batch facility in Scarborough, Maine accepted a portion of the stockpiled material with total arsenic concentrations in excess of Massachusetts landfill criteria. Transport of soil to CRS commenced on September 21, 2010 and was completed on September 28, 2010. On September 23, 2010, the Crapo Hill Landfill accepted the balance of the material, which met Massachusetts landfill criteria, and transportation of the soil began September 28, 2010 and was completed on September 30, 2010. A total of 2,511.54-tons of soil were shipped to the CRS facility. A total of 813.65-tons of soil were shipped to Crapo Hill Landfill facility.

  TRC submitted a RAM Completion Report to MassDEP on February 2, 2011.

  The City prepared a fact sheet in June 2010.

- **Varsity Improvements –** A RAM Plan was submitted to MassDEP on April 3, 2009 describing anticipated field refurbishment and upgrades at the Varsity Field. Work to be performed under the RAM included excavation of soil during installation of fence posts and paving, removal of existing asphalt, grading of warning tracks, bullpens and coaches boxes, pre-characterization

sampling, temporary stockpiling of soil, off-site reuse, recycling or disposal of select materials and as needed replacement of soil.

RAM Status Reports were submitted to MassDEP on July 24, 2009 and July 6, 2010, and a RAM Completion Report was filed on February 22, 2011.

- **Response Action Outcome and Notice of Activity & Use Limitation** - A RAO-P was filed on May 26, 2011 to document the achievement of a Class A-3 RAO-P under the MCP for Walsh Field as summarized below:

  - Response actions have been conducted to achieve a level of No Significant Risk:
  - The source of impacts at the Site have been controlled or eliminated;
  - A Permanent Solution has been achieved;
  - Impacts detected at the Site do not exceed an MCP UCL in soil and groundwater; and
  - An AUL has been implemented to maintain a level of No Significant Risk.

  Historical information, forensic review of historical aerial photographs, evaluation of soil analytical data, and review of soil boring information associated with environmental investigations conducted in the area of Walsh Field and New McCoy Field indicate that the area south of Parker Street contains widely distributed historic urban fill that is a background condition. Although the City filed a Class A-3 RAO-P and associated Notice of Activity and Use Limitations (AULs) for the Walsh Field, the City states that the area south of Parker Street is not affiliated with what is now understood to be the PSWS.

- ***Acquired Residential Properties***

  - **Demolition RAM Plan** - A RAM Plan submitted to MassDEP on September 9, 2009 described activities proposed to be undertaken at 101, 102, and 111 Greenwood Street and 98, 108, and 118 Ruggles Street (the "Acquired Residential Properties"). On September 17, 2009, a Modified RAM Plan was submitted to the MassDEP to address changes to the proposed demolition activities and served as a stand-alone replacement to the original RAM Plan. The Modified RAM Plan underwent a public comment period and initial site preparation activities (perimeter fence installation, initial erosion control measures and later installation of gates) were completed in September 2009 and February 2010. The City performed abatement work to remove hazardous materials from the dwellings which was not covered under the RAM Plan.

    Between March 8, 2010 and April 1, 2010, TRC conducted sampling of concrete from the sub-grade foundations of the Acquired Residential Properties (and exterior foam insulation at one residence) consistent with the City's

September 16, 2009 notification letter to the EPA and the City's formal addendum to the notification letter submitted to the EPA on February 17, 2010. Due to concentrations of PCBs in excess of 50 mg/kg in foundation concrete at the 102 Greenwood Street property and in excess of 1 mg/kg in foam insulation at the 118 Ruggles Street property, certain aspects of the demolition were subject to EPA jurisdiction.

A RAM Status Report was submitted to MassDEP on January 11, 2010 summarizing site activities.

Following a public comment period, a Revised Modified RAM Plan was submitted to MassDEP on July 6, 2010, which served as a stand-alone replacement to the September 17, 2009 Modified RAM Plan. Following receipt of MassDEP's Conditional Approval letter dated July 13, 2010, RAM-related demolition activities were implemented between July 15, 2010 and August 3, 2010, as follows:

- Installation of perimeter fence (completed in September 2009);
- Excavation and immediate replacement of soil during disconnection of utilities;
- Demolition of dwelling structures;
- Removal, segregation and off-site disposal of foam insulation (118 Ruggles Street property);
- Demolition and off-site disposal of concrete foundation (102 Greenwood Street property);
- Demolition and onsite management of concrete foundations and basement slabs at the six Acquired Residential Properties (except 102 Greenwood Street);
- Backfilling of basement space;
- Removal of other miscellaneous structures (e.g., above-ground swimming pool); and
- Minimal temporary soil stockpiling and stockpile management

- **Remedial Investigation –** Between December 2010 and February 2011, supplemental environmental investigation activities were conducted at the Acquired Residential Properties, including test pit excavation, advancement of soil borings using direct push GeoProbe® technology, soil sampling and laboratory analysis, monitoring well installation and groundwater sampling.

  TRC also conducted an environmental investigation for PCDDs and PCDFs, collectively referred to as dioxin compounds, in soil at the Acquired Residential Properties between June 7, 2011 and June 8, 2011. The sampling was conducted consistent with the *Proposed Acquired Residential Property Dioxin Sampling - Technical Approach 101, 102 and 111 Greenwood Street & 98, 108 and 128 Ruggles Street* memorandum dated April 13, 2011. The same approach employed at the NBHS campus was used to identify a population of

samples at the Acquired Residential Properties from which selected sample locations would undergo dioxin, furan and dioxin-like PCB congener analyses based on existing chemical signatures. Considering previous MassDEP comments on the outcome of the April 2010 NBHS sampling and consistent with previously proposed and implemented dioxin compounds investigative activities at the NBHS campus, the approach was designed to capture worst-case conditions and support risk assessment at the Acquired Residential Properties.

On June 7 and 8, 2011, soil samples were collected from 14 locations. Samples were collected from the top 0 to 1-foot and 1 to 3-foot zone, and were submitted for laboratory chlorinated dioxin/dibenzofuran congeners (SW-846 Method 8290) and full 209 list PCB congeners (SW-846 Method 1668A).

The analytical results associated with the dioxin investigation at Acquired Residential Properties are currently undergoing review and validation.

A Phase II CSA describing the Acquired Residential Properties investigation activities, including dioxin results, and a Phase III Remedial Action Plan are anticipated to be available for public comment soon.

- ***Residential Properties***

  - **110 Greenwood Street** - The City notified the MassDEP on January 3, 2011 of the intent to conduct further investigation activities on the 110 Greenwood Street property. The investigatory activities were described in a Proposed 110 Greenwood Street Delineation Investigation memorandum dated December 23, 2010.

    Despite repeated attempts, the City has been unable to gain access to the property.

  - **119 Greenwood Street -** A Class B-1 RAO-P was submitted to MassDEP on May 5, 2011, which concluded that a Condition of No Significant Risk exists and, therefore, no remedial actions were necessary.

- ***New Andrea McCoy Field (former Keith Junior High School)***

  - **RAM Implementation** - A RAM Plan was submitted to MassDEP on April 13, 2009 outlining risk reduction measures to be undertaken by the City at the New Andrea McCoy Field property (former Keith Junior High School) located at 70 Hathaway Boulevard. The applicable MassDEP RTNs were 4-15685 and 4-15824, but the RAM Plan was filed under RTN 4-15685. RAM activities were as follows:

    - Excavation of soil to reduce risk;

- Temporary soil stockpiling and stockpile management;
- Offsite reuse, recycling or disposal of soils;
- Onsite reuse of soil suitable for such application;
- Replacing the removed soil where necessary with appropriately documented contaminant-free fill material;
- On-site groundwater management where dewatering is required; and
- 2,957 tons of soil was excavated between May 1, 2009 and June 2010, and approximately 42,173 cubic yards of excess unimpacted soil were shipped to one of two commercial "like-sites" during implementation of the RAM in accordance with the June 26, 2009 letter to MassDEP describing a "like-site" soil management approach.

TRC submitted RAM Status Reports to MassDEP summarizing the implementation of RAM activities on August 10, 2009, February 11, 2010 and August 11, 2010, and a RAM Completion Report was submitted to MassDEP on November 24, 2010.

- **URAM Implementation** - A URAM was submitted to MassDEP on September 22, 2009 to facilitate installation of a horizontally directionally drilled force main sewer, and the City submitted a notification letter to the EPA regarding the directional drilling activities on October 26, 2009. EPA approved the installation of the force main, as designed, in a letter to the City dated November 12, 2009.

  A *Revised URAM Submittal for the New Andrea McCoy Field (Former Keith Junior High School)* memorandum was submitted to Mass DEP on December 15, 2009, which served to amend and update the URAM plan submitted on September 22, 2009.

  URAM Status Reports were submitted to MassDEP on January 15, 2010 and July 15, 2010, which describe the activities completed between September 29, 2009 and June 13, 2010.

  AURAM Completion Report was submitted to MassDEP on October 10, 2010.

- **RTN 4-15824** - The City submitted a RAO for the historic UST release at the New McCoy Field (tracked under RTN 4-15824), to MassDEP in June 2010.
- **Response Action Outcome and Notice of Activity & Use Limitation** - A RAO-P was submitted to MassDEP on May 26, 2011 to document the achievement of a Class A-3 RAO-P for McCoy Field as summarized below:

  - Response actions achieved a level of No Significant Risk;
  - The source of impacts at the Site were controlled or eliminated;
  - A Permanent Solution was achieved;
  - OHM at the Site do not exceed an MCP UCL in soil and groundwater; and

- An AUL has been implemented to maintain a level of No Significant Risk.

Several areas of soil that contributed to EPCs in excess of the MCP Method 1/Method 2 S-1 standards in the top three feet of soil were removed. Following soil removal, the excavations were backfilled with clean fill. Over 2,542 tons of impacted soil were removed as part of RAM and URAM activities to achieve the Class A-3 closure. After the soil removal, an AUL to prevent potential exposure to soils below the top three feet of S-1 compliant soil, and beneath pavement and building structures was prepared.

Historical information, forensic review of historical aerial photographs, evaluation of soil analytical data, and review of soil boring information associated with environmental investigations in the area of Walsh Field and New McCoy Field indicate that the area south of Parker Street contains widely distributed historic urban fill that is a background condition. Although the City filed a Class A-3 RAO-P and associated AUL for the New McCoy Field, the City states that the area south of Parker Street is not affiliated with what is now understood to be the PSWS.

- ***Nemasket Street Lots (former Bethel AME property)***

  - **Remedial Investigation -** A *Proposed Nemasket Street Lots Investigation Approach* memorandum was submitted to MassDEP on March 3, 2010 describing an iterative approach consistent with previous investigations throughout the PSWS.

    The City submitted a notification letter to the EPA on March 16, 2010 regarding preparations to conduct the clearing and subsequent environmental investigation at the Nemasket Street Lots. The EPA responded with comments on the proposed approach on March 24, 2010, and a response to comments memorandum was sent to EPA on June 18, 2010. On August 12, 2010 the EPA stated they had no further comments.

    Site clearing activities were conducted between October 14, 2010 and October 18, 2010. The initial site investigation activities consisted of a geophysical evaluation, including both ground penetrating radar (GPR) and electromagnetic (EM) conductivity techniques, conducted between October 22, 2010 and October 29, 2010. The results of the geophysical investigation provided guidance for the subsequent exploratory test pit investigation (23 test pits) conducted between October 25, 2010 and November 19, 2010.

    Additionally, 47 soil borings were advanced at the Nemasket Street Lots between December 2010 and June 2011.

An environmental investigation for PCDDs and PCDFs, collectively referred to as dioxin compounds, in soil at the Nemasket Street Lots was conducted between June 8, 2011 and June 10, 2011, consistent with the *Nemasket Street Dioxin Sampling - Technical Approach* memorandum dated April 15, 2011. A similar approach to that employed at the NBHS campus was used to identify a population of samples at the Nemasket Street Lots.

On June 8 and 10, 2011, soil samples were collected from 10 locations. Samples were collected from the top 0 to 1-foot and 1 to 3-foot zone and were submitted for laboratory chlorinated dioxin/dibenzofuran congeners (SW-846 Method 8290) and full 209 list PCB congeners (SW-846 Method 1668A).

The analytical results associated with the dioxin investigation at Nemasket Street are currently undergoing review and validation.

A Phase II CSA describing the Nemasket Street Lots investigation activities, including dioxin results, and a Phase III Remedial Action Plan are anticipated to be available for public comment soon.

- **Ruggles Street Right-of-Way IRA -** In October 2004, soil sampling was conducted adjacent to the Nemasket Street Lots within the northern portion of the Ruggles Street right-of-way.

  Additional soil sampling was undertaken in this area on March 24 and April 1, 2011. Soil samples were collected from each of the three soil boring locations from 0 to 1 foot and 1 to 3 feet below ground surface intervals.

  The analytical results were reported to the MassDEP via telephone on April 14, 2011. MassDEP orally approved IRA assessment activities and assigned RTN 4-23223.

  TRC performed further analysis on April 28, 2011, using the MassDEP trespasser shortform to calculate that no IH condition exists at the RG-ROW-2 area of the Ruggles Street right-of-way.

  IRA-related regulatory reporting for the Ruggles Street right-of-way IRA was fully documented in the IRA Completion Report submitted to MassDEP on June 10, 2011.

- ***Historic Urban Fill–*** During the reporting period, TRC evaluated data collected by TRC, BETA, VHB and EPA at and near the PSWS and noted strong lines of evidence indicating the presence of an extensive area of historic urban fill. A consensus definition of historic urban fill centers on the following characteristics:

  Fill-related impacts detected and remedied at Walsh and New McCoy Fields cannot be attributed to any known point source, except for certain surficial soil

used to construct the baseball diamonds at Walsh Field. Historically, Walsh Field was once an area of open space and a wetland (numerous soil borings encountered peat deposits) that was filled with common urban fill materials (e.g., primarily ash, coal, wood, glass, metal, with some debris) and consistent with other descriptions of historic urban fill deposition in Massachusetts such as charred wood and bricks (Collins, 2008).

Aerial photography indicates that the placement of fill at Walsh Field Football Field occurred sometime prior to 1910 (likely as early as 1868). By 1941 (based on historical topographical information), Walsh Field had already been filled and is indicated as dry land. Newspaper accounts note that the football field, previously known as Sargent Field, was constructed in 1910-1911 and that the wetlands in the area were harvested for peat prior to 1867. An aerial photograph of the Site from 1936 indicates that the football field had been constructed by that time, and that the remainder of Walsh Field had been filled and graded. The Site appears to have been completely filled by 1941. After 1941, there is only evidence of surface disturbances related to the construction of the athletic fields.

With over hundreds of soil samples collected by TRC and others submitted for chemical analysis, sufficient assessment and investigative actions have been conducted to render an opinion that historic fill is the sole source of the chemical impacts, except for the soil related to the baseball diamonds. There are no identifiable point sources other than historic fill connected to the wide-spread fill impacts at the Wash Field or New McCoy Field.

- **Wide range of materials –** Typically, historic urban fill contains a wide range of materials, including natural soils, brick, wood, and concrete from demolished buildings, petroleum or pavement residuals, and charred wood and ash (Collins 2005). Walsh Field soil contains the wide-spread presence of brick and wood, as well as coal, coal ash, and glass. The ash zone material lacks any odor or staining, exhibits little evidence of metal items, and is devoid of modern materials such as plastics, indicating that it is associated with deposition predating the 1950s when commercial scale plastics production began, and a period of time when coal was a principle fuel for power generation and heating in the greater New Bedford area.

- **Presence of exempt materials –** As noted in the MCP, concentrations of constituents attributable to coal ash or wood ash associated with fill material are considered background (310 CMR 40.0006) and in addition to coal are exempt from reporting under the MCP (310 CMR 40.0317(9)). The historic fill at Walsh Field and New McCoy Field contains an ash zone composed of a white or gray and occasionally black ash material containing combusted coal and wood, uncombusted coal and wood fragments, and occasionally small pieces of porcelain, brick, cinders, glass, or slag (clinkers).

Furthermore, the pyrogenic/petrogenic PAH concentration ratios of the ash zone material exhibit a combustion (pyrogenic) and non-petroleum origin, and the PAH chemical signatures evidence a mixed origin associated with coal, wood, and possibly some combustion engine exhaust residues (Budzinski et al, 1997, Gschwend & Hites, 1981, Lima et al 2005). This composition is consistent with that of an extensively urbanized area, being subject to automotive and industrial air emissions, and deposition from the historical large scale use of coal which was a principle fuel for power generation and heating in the greater New Bedford area.

- **Contaminants are characteristic of historic fill –** Documented discussions between MassDEP and the regulated community, such as the MassDEP-sponsored urban/historic fill workgroup meetings held in 2007 and 2008, recognize that historic fill consistently displays oil and hazardous materials (OHM), such as polyaromatic hydrocarbons (PAHs), lead, and other metals that are not related to identifiable exempt material or to specific releases (Zirbel, 2010). The concentrations of PAHs and metals in Walsh Field soil/fill documented in the numerous reports field with MassDEP are consistent with widely documented concentrations metals and PAHs in coal and coal-derived fly ash and bottom ash (EPA 2000 and LSPA 1999).

  The maximum concentration of PCBs detected at Walsh Field was 0.25 mg/kg, well below the most stringent MassDEP (2 mg/kg) or EPA (1 mg/kg) cleanup standards. The absence of significant levels of PCBs at Walsh Field and McCoy Field is evidence that the fill was placed prior to the commercial use of PCBs. Similarly, the concentrations of PCBs detected at New McCoy Field ranged from 0.02 mg/kg to 1.174 mg/kg, also below the most stringent MassDEP (2 mg/kg) cleanup standard. In fact, concentrations ranging from 0.1 mg/kg to 1 mg/kg may be considered background (EPA, 1990b). According to EPA, because of the persistence and pervasiveness of PCBs, PCBs will be present in background samples at many sites (EPA, 1990a). The low concentrations of PCBs detected as Walsh Field and New McCoy Field are most likely related to more recent air emissions and atmospheric deposition.

  The notable difference in PCB concentrations between the north side of Parker Street (higher and more frequently detected) versus the south side of Parker Street (lower, infrequently detected, and consistent with EPA background) indicates that the south side of Parker Street is not consistent with the impacts discovered on the north side of Parker Street, but that the southerly area is a background situation characterized by historic urban fill. This conclusion is supported by historic aerial photographs that show areas south of Parker Street were developed with housing and recreational facilities predating potential depositional events north of Parker Street.

- **Ubiquitous nature –** Fill in an urban landscape is widely present and is characterized by a widespread presence of certain types of impacts.

Lead has a high frequency of detection in urban fill soils and was detected in 98-percent of the more than 300 samples collected to characterize various urban park sites in Boston, as noted by Swanson and Lamie (2007). Lead is ubiquitous in urban fill soils due to its natural occurrence and anthropogenic sources, such as the historical use of leaded gasoline, leaded paint on building construction materials (including steel beams), and its presence in pipes and in solder.

PAHs are ubiquitous in the environment and combustion processes are responsible for the vast majority of the PAHs that enter the environment (Lima et al, 2005). As further noted by Swanson & Lamie (2007), metals and PAHs, as represented by benzo(a)pyrene, are ubiquitous in urban fill soils. Because PAHs are the product of incomplete combustion, they are detected in non-urban soils from fallout from forest fires, and are very prominent in urban soils due to various anthropogenic emission and pavement sources over and above that provided by natural sources.

Lead and PAHs such as benzo (a) pyrene were widespread at Walsh Field and New McCoy Field, suggesting that the ash fill discovered at those locations are of fairly common origin in the area. The presence of fill in neighboring residential lots and beneath the Walsh Field football stadium constructed during a known timeframe (late 1800s and early 1900s) emphasizes that the fill predates modern (i.e., twentieth century) industrial activities and represents a legacy of wetland filling common during that time period using readily available and inexpensive materials prevalent at that time: ash residues from coal-related power generation.

The neighboring New McCoy Field is also underlain beneath its eastern and northern boundaries by historically deposited urban fill of similar physical and chemical composition. Boring logs from the New McCoy Field document the presence of ash, coal, glass, and metal in this area, which is consistent with fill characteristics at Walsh Field.

EPA boring logs from properties bordering the eastern, western and southern flanks of Walsh Field also reveal the presence of ash, coal, and slag ("clinkers"), signaling the presence of widespread historic urban fill. A preliminary review of EPA's analytical data from the surrounding area also indicates the presence of PAHs and metals at concentrations consistent with historic urban fill deposition.

Background – Please see the respective RAO documents for Walsh Field and New McCoy Field regarding the feasibility of approaching or achieving background, which take into account the distribution of metal and PAH concentrations in the Site soils where the feasibility of achieving background in the context of a Site located within a larger district of historic urban fill is framed in comparison to MCP guidance

documents. Per the MCP, background is defined as those levels of OHM that would exist in the absence of the disposal site of concern which are either: a) ubiquitous and consistently present in the environment at and in the vicinity of the disposal site of concern; and attributable to geologic or ecological conditions, or atmospheric deposition of industrial process or engine emissions; b) attributable to coal ash or wood ash associated with fill material; c) releases to groundwater from a public water supply system; or d) petroleum residues that are incidental to the normal operation of motor vehicles. The following discussion is framed in comparison to MassDEP's background concentrations in soil containing coal ash or wood ash (hereinafter "Ash Background") as published in the May 2002, Technical Update (MassDEP 2002a).

Walsh Field – Soil EPCs for impacted soil within the 0 to 3 feet interval are below Method 1 S-1 soil standards. The maximum concentrations of certain chemicals (certain PAHs, mercury, arsenic, barium, beryllium, cadmium, chromium, lead, nickel, silver, vanadium, and zinc) are above the MassDEP "ash background". However, a comparison of Site data for remaining soils with that utilized by MassDEP for the development of the Ash Background in the Technical Update, supports a conclusion that the remaining soils at Walsh Field are comparable to that of Ash Background. A comparison of the 90th percentile value of Site soil concentrations to Ash Background concentrations (which were based on the 90th percentile value of ash containing soil concentrations in the database utilized by MassDEP for the preparation of the Technical Update) indicates that Site soil concentrations approach or are below Ash Background concentrations for PAHs and metals at Walsh Field, with the exception of barium (which may be attributable to the presence of glass (Hammond, 2000) or coal (Dewan, 2008) in the fill material encountered at the Site). A comparison of the maximum concentration of PAHs and metals detected at the Site with the maximum concentrations utilized for the Ash Background determination indicates that soil maximum concentrations approach or are below ash background, for all of the PAHs and most of the detected metals.

New McCoy Field - Soil EPCs for impacted soil within the 0 to 3 feet interval are below Method 1 S-1 soil standards. The maximum concentration of certain chemicals (certain PAHs and metals) are above the MassDEP Background Concentrations in soil containing coal ash or wood ash ("Ash Background") published in the May 2002, Technical Update (MassDEP 2002). However, a comparison of Site data for remaining soils with that utilized by MassDEP for the development of the Ash Background in the Technical Update, supports a conclusion that the remaining soils at New McCoy Field are comparable to that of Ash Background. A comparison of the 90^{th} percentile value of Site soil concentrations to Ash Background concentrations (which were based on the 90^{th} percentile value of ash containing soil concentrations in the database utilized by MassDEP for the preparation of the Technical Update) indicates that Site soil concentrations approach or are below Ash Background concentrations for PAHs and metals at the Site, with few exceptions. A comparison of the maximum concentration of PAHs and metals detected at New McCoy Field with the maximum concentrations utilized for the Ash Background determination, indicate

that Site soil maximum concentrations approach or are below Ash Background, for all of the PAHs and most of the detected metals.

Notwithstanding the consistency of the soil at Walsh Field and the New McCoy Field with an emerging consensus definition of historic urban fill, the history of the fields, and the database from which the MassDEP coal ash background guidelines were developed, all response actions performed to date at Walsh Field and New McCoy Field were performed in compliance with MCP.

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PROPOSED SCHEDULE

The following table presents a proposed scheduled for major response actions currently underway throughout the Site, associated deliverable(s) and estimated timeframe for submittal of those deliverables for public comment (where required) or to the MassDEP.

Special Project Schedule			
Project Area/Location	**Deliverable/Activity**	**Proposed Due Date[1]**	**Notes/Comments**
New Bedford High School	RAO/AUL (partial)	December 16, 2011	▪ Exterior soil remedy. ▪ Mechanical room groundwater on separate track. ▪ Assumes completion of field work by mid Fall (soil shipment). ▪ Assumes solar park area use sufficiently changed to allow closure to proceed (e.g., covered with stone, etc.). ▪ Assumes no further characterization for dioxins required or if potential risk posed by dioxin in soil, schedule may change.
	Construction-related Release Abatement Measure (RAM)	TBD	Solar park construction support contingency.
	Utility Related Abatement Measure (URAM)	TBD	▪ Solar park support contingency. ▪ Subterranean conduit runs for power supply and connection to grid.
	VOC SRM/CEP modified IRA Plan	December 16, 2011	Phase III/IV not required if managed under a Modified IRA Plan.
Residential/Commercial	RAM Plans	TBD	▪ Highly access dependent.

Special Project Schedule			
Project Area/Location	**Deliverable/Activity**	**Proposed Due Date[1]**	**Notes/Comments**
Parcels ▪ Corner Sports ▪ 284 Durfee ▪ 288 Durfee ▪ 110 Greenwood			▪ May require some delineation borings. ▪ Goal is to gain secure access to each parcel in 2011/2012 ▪ Issue RAM Plans in 2012 where access acquired. ▪ Assumes no public review process. ▪ City will apprise MassDEP of progress and commit to due dates as access is secured.
Acquired Residential Properties	Phase IV/RAM plan	February 3, 2012	Assumes acceptance of Phase III approach
	Performance based disposal notification.	February 3, 2012	City to apprise MassDEP if EPA risk-based approach selected instead. Will require schedule modification if selected.
Nemasket Street Lots[2,3]	Phase IV/RAM plan	February 3, 2012	Assumes acceptance of Phase III approach
	Performance based disposal notification.	February 3, 2012	City to apprise MassDEP if risk-based approach selected instead. Will require schedule modification if selected.
Parker Street Waste Site	Tier Classification	December 2, 2011	Re-apply for Special Project extension??

Notes:
MassDEP – Massachusetts Department of Environmental Protection
ORS – Office of Research and Standards

1- All due dates assume start of public comment period where City-owned parcels are concerned, unless indicated otherwise by the City.
2- To be combined with Acquired Residential Property submittals where practicable.
3- Assumes no delays caused MassDEP or others by City's wedge position on Nemasket lot.
4- Assumes work performed by Department of Public Infrastructure (soil excavation, paving, laying out of fabric, soil cap, etc).

Please do not hesitate to contact me at TRC at 978-656-3565 or via e-mail at dsullivan@trcsolutions.com if you have any questions or comments.

Sincerely,
TRC Environmental Corporation

David M. Sullivan, LSP, CHMM
Senior Project Manager

cc: S. Alfonse, City of New Bedford
C. Henlin, City of New Bedford